APPENDIX

Indiana Scientific Instrument Project
June 1998
A Program for Secondary School Science Education
Scientific Instruments for Students: A Model for Indiana

Problem:
Most schools in Indiana do not have the scientific equipment necessary to carry out the state mandated Advanced Placement and Tech Prep programs as well as Core 40, Academic Honors Diploma, and School-to-Work science requirements.

Solution:
Establish a Scientific Instrument Project at eight sites throughout the State of Indiana to:

I. educate high school science teachers in the use of modern instrument technologies for making scientific measurements, and
II. deliver class sets of scientific instruments to their students for hands-on experimentation in the classroom.

Detail:
Teachers participate in a rigorous staff development program to learn how to use the instruments and to develop experiments appropriate for the high school laboratory and consistent with Indiana Curriculum Proficiencies. Emphasis on real-world applications helps to reinforce science for students.

Class sets of equipment are delivered, as needed, and then remain in the classroom for the time required for students to conduct an experiment—usually one week. This provides an opportunity for young students, from Tech Prep to Advanced Placement, to perform science with instruments used in research laboratories today. These experiences increase student and teacher skills as well as understanding of modern scientific technology.

With eight sites, this project will be a cost-effective solution for meeting state mandates as well as providing science education at a level necessary for student success at work or in postsecondary education.

Background:
The School of Science at Purdue University, through its chemistry and biology departments, currently delivers scientific instruments to 100 teachers in 49 high schools in a 17 county area surrounding West Lafayette. This scientific technology project has created opportunities for both teachers and students to learn the theory and practice of scientific instrumentation. Statewide adaptations of this model have been established in the states of Alabama and Delaware. There is currently a bill before the legislature in Pennsylvania. Other universities in Indiana have indicated a willingness to participate in a statewide project.

Proposal:

In order to expand the project throughout the State of Indiana , a staff development program would have to be instituted, appropriate instruments would have to be purchased, and appropriate, inclusive distribution methods would need to be determined.

For all schools in the State of Indiana to individually purchase only the equipment would require an expense of approximately $30 million. The Indiana Scientific Instrument Project would expend $5 million per year (vs. $30 million if all schools purchased the equipment only) that would include staff development, equipment purchase and maintenance, and delivery support systems:

Eight host sites, each serving approximately 45 schools (based on an estimate of 350 high schools in the state). Each site would:

- train teachers in the use of instruments,
- operate a delivery/support service for approximately 45 high schools in the area,
- repair scientific instruments,
- store sets of instruments

Estimated operational cost: $332,000/site/year.

Capital outlays for equipment purchases during the first two years:

- year one, the vehicle, chemistry Instruments, and biology instruments
- year two, physics equipment and chemistry/biology inventory of instruments.

Estimated capital expenditures: $245,000/year/site. Expenditures would be reduced after initial capital outlays.

The Indiana Department of Education program coordination, host site selection, administration, evaluation; estimated expenditure: $315,000/annum (6.4 percent of annual budget).

Summary Budget:

Indiana Department of Education oversight/year	$0.32 M
Operational cost/year for eight sites @ $332,000/site:	$2.66 M
Capital expenditures for equipment for eight sites @ $245,000	$1.96 M
	Total: $4.94M